Remarks

1. Summary of the office action

In the office action mailed October 20, 2008, the Examiner stated that claims 1-32, 34-63, 65-81, 83, 106, and 108-119 are allowable over the prior art, however there is a double patenting rejection of these claims. Additionally, (i) the Examiner rejected claims 84, 85, 97, 101, and 103 under 35 U.S.C. § 103(a) as being anticipated by[1] U.S. Patent No. 6,414,955 (Clare) in view of *Information Routing and Reliability Issues in Distributed Sensor Networks* (Lyengar), and *Network Structures for Distributed Situation Assessment* (Wesson), (ii) the Examiner rejected claims 92, 94, 101, and 102 under 35 U.S.C. § 103(a) as being unpatentable over Clare and Lyengar in view of U.S. Patent No. 5,742,829 (Davis), (iii) the Examiner rejected claim 91 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar, and Wesson in view of U.S. Patent Application Publication No. 2002/0154631 (Makansi), and (iv) the Examiner rejected claims 99 and 100 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar, and Wesson in view of U.S. Patent No. 6,546,419 (Humpleman).

2. Claim amendments and status of the claims

Applicant has amended claims 1, 83-85, 92, 97, 101, and 103. Now pending in this application are claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119. Of the pending claims, claims 1, 63, 80, 83-85, 92, 95, 97, 101, 103, 106, and 112 are independent.

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[1] Applicant believes that the Examiner meant to say "unpatentable over" rather than "anticipated by." Hereinafter, Applicant uses "unpatentable over" instead of "anticipated by" when discussing claims 84, 85, 97, 101, and 103.

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3. Double patenting rejections

With respect to the double patenting rejections, (i) the Examiner stated that claims 1-62 of U.S. Patent No. 7,020,701 anticipate and contain every element of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 of this application, (ii) the Examiner stated that claims 1-55 of U.S. Patent No. 6,859,831 anticipate and contain every element of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 of this application, (iii) the Examiner stated that claims 1-61 of U.S. Patent No. 6,832,251 anticipate and contain every element of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 of this application, (iv) the Examiner stated that claims 1-68 of U.S. Patent No. 6,826,607 anticipate and contain every element of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 of this application, (v) the Examiner stated that claims 1-4, 9-14, 16, 18, 20-24, 27-38, 40, 41, 43, and 45-55 of U.S. Patent Application No. 09/684,387 contain every element of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 of this application and anticipate claims 1-56[2] of this application, and (vi) the Examiner stated that claims 1-56 of U.S. Patent Application No. 09684,742 anticipate and contain every element of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 of this application.

Applicant submits herewith (i) a terminal disclaimer to obviate a double patenting rejection over a "prior" patent (for prior patent number 7,020,701, prior patent number

[2] Since the Examiner stated U.S. Pat. App. No. 09/684,387 contains every element of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119, Applicant assumes that the Examiner meant to say that U.S. Pat. App. No. 09/684,387 anticipates claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 instead of claims 1-56.

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6,859,831, prior patent number 6,832,251, and prior patent number 6,826,607), and (ii) payment of the terminal disclaimer fee under 37 C.F.R. 1.20(d). Applicant submits that the terminal disclaimer overcomes the double patenting rejections of claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 over the above-identified "prior" patent. With respect to the provisional double patenting rejection over pending reference applications (for reference application number 09/684,387 and reference application number 09/684,742), Applicants submit that it should be withdrawn pursuant to MPEP 804 I.B because it is the only remaining rejection in the application.

4. Response to claim rejections under 35 U.S.C. § 103(a)

a. Claim 84

The Examiner rejected independent claim 84 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar, and Wesson. Applicant submits that Clare, Lyengar, and Wesson do not reasonably lead to each and every element recited in claim 84. In particular, Clare, Lyengar, and Wesson do not reasonably lead to wherein at least one of the plurality of levels of synchronization is energy usage aware.

In rejecting claim 84, the Examiner stated that Clare and Lyengar do not disclose ***a plurality*** of levels of synchronization which are energy usage aware. (Emphasis added). Applicant submits that claim 84 does not require that ***a plurality*** of the levels of synchronization is energy usage aware, but rather that ***at least one of the plurality*** of levels of synchronization is energy usage aware. Applicant submits that Clare and Lyengar do not disclose or suggest wherein at least one of the plurality of levels of synchronization is energy usage aware.

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In rejecting claim 84, the Examiner relied on Wesson to make up for the deficiency of Clare and Lyengar. In doing so, the Examiner stated that Wesson discloses a plurality of distributed sensors, each with a different level of synchronization with its master and being energy usage aware (i.e., distributed hierarchical cone provides communications with various layers, based on the reporting requirements of the master, only when energy is detected would a message be created, or to assist in reallocation of messages). *See*, office action, page 6, lines 21-22, and page 7, lines 1-3. The Examiner cited to Wesson, pages 8 and 23.

On the pages cited by the Examiner, Wesson, as best, discloses (i) in direct contrast to a "cooperating experts" paradigm lies a very hierarchical "theory Y" or "perceptual cone" organization, (ii) organizations of this class are assembled as strict hierarchies of abstraction levels, (iii) at each level, individual elements receive reports from the levels below them, integrate the reports according to their special skills and position in the hierarchy, and report upward abstracted versions of their results, and (iv) task allocation functions including deallocating all responsibility for a region when a sensor's region is inactive and reporting to a superior during an idle condition.

Even if it is assumed, for the sake of argument, that Wesson's hierarchical perceptual cone structure provides for a plurality of levels of synchronization, and that deallocating all responsibility or reporting to a superior, or both, amounts to a level of synchronization, Applicant submits that a sensor's region being inactive or idle does not amount to at least one of the plurality of levels of synchronization being energy usage aware.

Therefore, even if Clare and Lyengar are modified with Wesson, Applicant submits that Clare, Lyengar and Wesson do not disclose or suggest that at least one of the plurality of levels of synchronization is energy usage aware. Because Clare, Lyengar, and Wesson do not disclose or

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suggest each and every element recited in independent claim 84, Applicants submits that claim 84 is allowable.

b. Claims 85 and 91

In the office action at page 5, first paragraph, the Examiner stated, "Claims 84, ***85***, 97, 101, and 103 are rejected under 35 U.S.C. § 103 ... ." (Emphasis added). In the very next paragraph, the Examiner stated, "Referring to claims 84, ***95***, 97, 101, and 103, ..." Although the Examiner proceeded to assert that certain claim elements are disclosed by Clare, Lyengar, and Wesson, as far as Applicant can tell, the Examiner did not describe how Clare, Lyengar, and Wesson disclose or suggest each and every element recited in claim 85. *See*, office action, pages 5-7.

Applicant submits that Clare, Lyengar, and Wesson do not reasonably lead to wherein the message packets are aggregated into compact forms, wherein the message packets are aggregated into the compact forms using message aggregation protocols, and ***wherein the message aggregation protocols are adaptive to message priority and available energy***, as recited in claim 85.

Because Clare, Lyengar, and Wesson do not disclose or suggest each and every element recited in independent claim 85, Applicants submits that claim 85 is allowable. Further, without conceding the assertions made by the Examiner regarding dependent claim 91, Applicant submits that dependent claim 91 is allowable for at least the reason that it depends from allowable claim 85.

c. Claims 97, 99 and 100

The Examiner rejected independent claim 97 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar and Wesson. Although the Examiner stated, "Referring to claims 84, 95, ***97***, 101, and 103 Clare discloses a sensor network comprising a plurality of network

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elements including: ...", as far as Applicant can tell, the Examiner did not provide an explanation of how Clare, Lyengar, and Wesson disclose or suggest each and every element recited in claim 97. *See*, office action, pages 5-7, emphasis added.

At a minimum, Clare, Lyengar, and Wesson do not disclose or suggest wherein the plurality of network elements is further configured to perform routing of the sensor data in the network in response to energy detection for one or more nodes on potential routes for the routing of the data, as recited in claim 97.

In rejecting claim 97, the Examiner stated Clare-Lyengar do not disclose a plurality of levels of synchronization which are energy usage aware, and that in analogous art, Wesson discloses a plurality of distributed sensors, each with a different level of synchronization with its master and is energy usage aware (i.e., distributed hierarchical cone provides communications with various layers, based on the reporting requirements of the master, only when energy is detected would a message be created, or to assist in reallocation of messages. The Examiner cited to Wesson, pages 8 and 23.

On the pages cited by the Examiner, Wesson, as best, discloses (i) in direct contrast to a "cooperating experts" paradigm lies a very hierarchical "theory Y" or "perceptual cone" organization, (ii) organizations of this class are assembled as strict hierarchies of abstraction levels, (iii) at each level, individual elements receive reports from the levels below them, integrate the reports according to their special skills and position in the hierarchy, and report upward abstracted versions of their results, and (iv) task allocation functions including deallocating all responsibility for a region when a sensor's region is inactive, and reporting to a superior during an idle condition.

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Even if it is assumed, for the sake of argument, that deallocating all responsibility for a region or reporting to a superior, or both, amounts to routing of sensor data in a network, Applicant submits that deallocating all responsibility for a region or reporting to a superior when a sensor's region is inactive or during an idle condition does not amount to wherein the plurality of network elements is further configured to perform routing of the sensor data in the network in response to energy detection for one or more nodes on potential routes for the routing of the data, as recited in claim 97.

Because Clare, Lyengar, and Wesson do not disclose or suggest each and every element recited in independent claim 97, Applicants submits that claim 97 is allowable. Further, without conceding the assertions made by the Examiner regarding dependent claims 99 and 100, Applicant submits that dependent claims 99 and 100 are allowable for at least the reason that they depend from allowable claim 97.

d. Claim 101

The Examiner rejected independent claim 101 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar, and Wesson, and the Examiner rejected claim 101 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar, and Davis.

(i) Clare, Lyengar, and Wesson

Applicant submits that Clare, Lyengar, and Wesson do not reasonably lead to each and every element of independent claim 101, and that the Examiner therefore has not established *prima facie* obviousness of claim 101 using Clare, Lyengar, and Wesson.

At a minimum, Clare, Lyengar, and Wesson do not reasonably lead to wherein the at least one node is further configured to ***provide node information including message priority and energy***

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availability to the plurality of network elements and to predistribute code and data anticipated for future use through the network using low priority messages, as recited in claim 101.

In rejecting claim 101, the Examiner argued that Clare discloses wherein the at least one node provides node information including ***message priority*** to the plurality of network elements. *See*, office action, page 5, fifth paragraph, emphasis added. Even if it is assumed, for the sake of argument, that Clare discloses a node that is configured to provide node information including ***message priority*** to a plurality of network elements, Clare, alone or in combination with Lyengar and Wesson, does not disclose or suggest that a node is configured to provide node information including ***energy availability*** to the plurality of network elements.

In rejecting claim 101, the Examiner argued that Wesson discloses a plurality of distributed sensors, each with a different level of synchronization with its master and is energy usage aware (i.e., distributed hierarchical code provides communications with various layers, based on the reporting requirements of the master, only when energy is detected would a message be created, or to assist in reallocation of messages). *See*, office action, page 6, fourth paragraph and page 7, first paragraph. Even if it is assumed, for the sake of argument, that this disclosure is contained in Wesson, Applicant submits that creating a message only when energy is detected does not amount to a node that is configured to provide node information including energy availability to the plurality of network elements, as recited in claim 101.

Because Clare, Lyengar, and Wesson do not reasonably lead to each and every element recited in claim 101, Applicant submits the Examiner has not established *prima facie* obviousness of claim 101 over Clare, Lyengar, and Wesson, and that claim 101 therefore is allowable over Clare, Lyengar, and Wesson.

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(ii) Clare, Lyengar, and Davis

Applicant submits that Clare, Lyengar, and Davis do not reasonably lead to each and every element of independent claim 101, and that the Examiner therefore has not established *prima facie* obviousness of claim 101 using Clare, Lyengar, and Davis.

At a minimum, Clare, Lyengar, and Davis do not reasonably lead to wherein the at least one node is further configured to provide node information including message priority and energy availability to the plurality of network elements and to predistribute code and data anticipated for future use through the network using low priority messages, as recited in claim 101.

In rejecting claim 101, the Examiner argued that Clare discloses wherein the at least one node provides node information including ***message priority*** to the plurality of network elements. *See*, office action, page 5, fifth paragraph, emphasis added. Even if it is assumed, for the sake of argument, that Clare discloses a node that is configured to provide node information including ***message priority*** to a plurality of network elements, Clare, alone or in combination with Lyengar and Davis, does not disclose or suggest that a node is configured to provide node information including ***energy availability*** to the plurality of network elements.

In rejecting claim 101, the Examiner stated that Davis discloses a network wherein distributing code and data anticipated for future use through the sensor network using low priority messages (i.e., in the background), wherein the code and the data are downloadable from a storage device (it is inherent that the code/data are downloadable from a storage device) (col. 6, lines 27-65)." *See*, office action, page 7, third paragraph. Applicant submits that this portion of Davis, alone or in combination with Clare, Lyengar, and the other portion of Davis, does not amount to at least one node that is further configured to provide node information including message priority and

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energy availability to the plurality of network elements and to predistribute code and data anticipated for future use through the network using low priority messages, as recited in claim 101.

Because Clare, Lyengar, and Davis do not reasonably lead to each and every element recited in claim 101, Applicant submits the Examiner has not established *prima facie* obviousness of claim 101 over Clare, Lyengar, and Davis, and that claim 101 therefore is allowable over Clare, Lyengar, and Davis.

e. Claim 103

The Examiner rejected independent claim 103 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar and Wesson. The Examiner discussed the rejection of claim 103 when discussing the rejection of claims 84, 85, 95, 97, and 101. As far as Applicant can tell, the Examiner did not discuss each and every element of claim 103 when discussing the rejection of claim 103.

Applicant submits that Clare, Lyengar, and Wesson, at a minimum, do not reasonably lead to wherein the at least one node is further configured to ***provide node information including node resource cost to the plurality of network elements***, and wherein the plurality of network elements is configured to ***distribute data processing through the sensor network in response to the node resource cost***, as recited in claim 103.

Clare, Lyengar, and Wesson, at best, disclose that (i) in the absence of full communication, each node of a distributed sensor network (DSN) may contain executable simulations of neighboring processors, so that what communication does exist can be used to generate and maintain a consistent picture of what the neighbor might know, and (ii) the cost/benefit of maintaining such a simulation of neighboring belief systems depends on the relationship between

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the parameters of communication, such as ***cost*** and availability, and those of computation, such as the ability to update and store alternate world states as often as necessary. *See*, Wesson, page 12, first column, third paragraph. Applicant submits that Wesson's parameters of communication, such as cost availability, do not amount to the claimed node information including resource cost. Moreover, even if it is assumed, for the sake of argument, that Wesson's parameters of communication, such as cost availability, amount to the claimed node information, Applicant submits that Clare, Lyengar, and Wesson do not disclose or suggest providing the parameters of communication, such as cost availability, to a plurality of network elements.

In rejecting claim 103, the Examiner stated that Clare discloses wherein the at least one node provides, after the plurality of network elements are self-assembled into a multi-cluster network (i.e., after the communicating nodes and the interfering nodes have been identified) node information include ***node resource cost (i.e., network self-organization and routing)*** and message priority (i.e., characteristic and traffic) to the plurality of network elements. The Examiner cited to Clare, column 4, lines 56-67 and column 15, lines 10-24 and 43-56 in support. Applicant submits that network self-organization and routing does not amount to node resource cost.

Because Clare, Lyengar, and Wesson do not disclose or suggest each and every element recited in independent claim 103, Applicants submits that claim 103 is allowable.

f. Claims 92, 94, and 102

The Examiner rejected claims 92, 94, and 102 under 35 U.S.C. § 103(a) as being unpatentable over Clare, Lyengar, and Davis. Of these claims, claim 92 is independent, and claim 102 has been cancelled. Applicant submits that Clare, Lyengar, and Davis do not reasonably lead to each and every element of independent claim 92.

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In rejecting claim 92, the Examiner stated, "Referring to claim 92, Clare-[L]yengar discloses the invention as substantively as described in claim 84." See, office action, page 7, third paragraph. Although the first two lines of claim 92 are identical to the first two lines of claim 84, none of the remaining elements of claim 92 (lines 3-13 of claim 92) are recited in claim 84.

Even if it is assumed, for the sake of argument, that Clare, Lyengar, and Davis discloses wherein the at least one node includes at least one sensor, as far as Applicant can tell, the Examiner did not describe how Clare, Lyengar, and Davis disclose or suggest the elements of claim 92, lines 4-13. Instead, the Examiner stated, "Clare does not disclose distributing code and data anticipated for future use through the sensor network using ***low priority messages***, wherein the code and data are downloadable from a storage device. Davis discloses a network wherein distributing code and data anticipated for future use through the sensor network using low priority messages (i.e., in the background), wherein the code and the data are downloadable from a storage device (it is inherent that the code/data are downloadable from a storage device) (col. 6, lines 27-65)." *See*, office action, page 7, third paragraph, emphasis added.

Applicant submits that Clare, Lyengar, and Davis, at a minimum, do not reasonably lead to (i) wherein the at least one node is further configured to process data gathered from the monitored environment by the at least one sensor and to ***propagate a predetermined identifying code representing the gathered data through the sensor network***, (ii) wherein the plurality of network elements is configured to represent a high priority message containing information regarding a high priority event by a high priority message code, and (iii) wherein receipt of the high priority message code by the at least one node invokes a priority protocol that causes message packets to be broadcast to nodes adjacent to a path that will inhibit messaging from

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nodes not engaged in conveying the information regarding the high priority event, as recited in claim 92.

Because Clare, Lyengar, and Davis don not reasonably lead to each and every element recited in claim 92, Applicant submits that claim 92 is allowable. Further, without conceding the assertions made by the Examiner regarding dependent claim 94, Applicant submits that dependent claim 94 is allowable for at least the reason that it depends from allowable claim 92.

5. Conclusion

Applicant believes that all of the pending claims have been addressed in this response. However, failure to address a specific rejection or assertion made by the Examiner does not signify that Applicant agrees with or concedes that rejection or assertion.

For the foregoing reasons, Applicant submits that claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 are in condition for allowance. Therefore, Applicant respectfully requests favorable reconsideration and allowance of all the pending claims.

Respectfully submitted,

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